Claims

1. Method for responding rapidly to the failure of a link between two routing domains (AS-6, AS-8) in a packet-oriented network, whereby

- the failure of the link is detected by one of the routing domains (AS-6, AS-8),

- for at least one route to a destination point, which passes via the failed link, at least one substitute route is provided to the destination point, in that

-- routing domains (AS-5, AS-7) lying on the substitute route are notified, and

-- routing domains (AS-5, AS-7) which have been notified and which lie along the substitute route adjust their inter-domain routing to give a routing to the destination point along the substitute route, until all the routing domains (AS-5, AS-6) on the substitute route have adjusted their inter-domain routing to give a routing to the destination point along the substitute route.

2. Method in accordance with claim 1
characterized in that

- a router (BGPspk1) in a routing domain is notified about the link failure,

- the router (BGPspk1) in the routing domain selects an alternative route to the route which passes via the failed link, which does not pass via the failed link,

- the address of a router (BGPspk2) in the next routing domain on the alternative route is specified as the next destination for the inter-domain routing to the destination point, and

- a message is sent to the next routing domain on the alternative route, notifying the next routing domain about the

link failure.

3. Method in accordance with claim 1 or 2, characterized in that

- a router in a routing domain is notified about the link failure,
- for a route which passes via the failed link, the router checks whether a substitute route has already been set up,
- if there is such a substitute route, no message about the link failure will be sent to the next routing domain on the substitute route.

4. Method in accordance with one of the preceding claims, characterized in that

- a router (BGPspk1, BGPspk2) in a routing domain is notified about the link failure,
- for each of the routes which pass via the failed link, the router (BGPspk1, BGPspk2) selects alternative routes which do not pass via the failed link, and
- the address of a router belonging to the next routing domain along the alternative route concerned is specified as the next destination for the inter-domain routing to the destination point of the route concerned which has failed.

5. Method in accordance with one of the preceding claims, characterized in that

- a router (BGPspk1) selects more than one alternative route to a route which passes via the failed link, such that the selected alternative routes do not pass via the failed link, and
- the address of a router (BGPspk2) which belongs to the next routing domain on an alternative route is specified as the next destination for the routing to the destination point of the

failed link and for at least one second alternative route the address of a router which belongs to the next routing domain on the second alternative route is specified as the alternative next destination for the inter-domain routing to the destination point.

6. Method in accordance with one of the preceding claims, characterized in that

- a router (BGPspk1) selects more than one alternative route to a route which passes via the failed link, whereby the selected alternative routes do not pass via the failed link,
- the address of a router (BGPspk2) which belongs to the next routing domain on a first alternative route is specified as the next destination for the routing to the destination point of the route which passes via the failed link, and for at least one second alternative route the address of a router which belongs to the next routing domain on the second alternative route is again specified as the next destination for the inter-domain routing to the destination point, and
- for inter-domain routing over a substitute route for the route which passes via the failed link, the next destination is determined by reference to parameters which relate to data packets.

7. Method in accordance with one of the preceding claims, characterized in that

- there is a protocol which provides for the network-wide propagation of messages for determining (calculating) optimal routes, and
- after a link failure, any redetermination of the optimal routes for inter-domain routing to take into account the link failure is suppressed for a time period by means of the protocol.

8. Method in accordance with claim 7
characterized in that
- after the time period has expired, a network-wide propagation of messages for the determination of optimal routes for inter-domain routing is then undertaken if the link failure is still extant.

9. Method in accordance with claim 7 or 8,
characterized in that
- the protocol used for the redetermination of optimal routes is the BGP (Border Gateway Protocol) protocol.

10. Method in accordance with one of the preceding claims,
characterized in that
- a route which has been replaced by an alternative route is marked with respect to its possible restoration to service.

11. Router with facilities for carrying out a method in accordance with one of the claims 1 to 10.